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ABSTRACT

This directory lists 24 organizations providing educational resource materials on rural science and technology, conservation, and the environment. Each entry contains the address and phone number of the organization, name of a contact person, and brief description of programs, activities, publications, and services available. Resource materials cover: (1) the teaching of agriscience technology in high school; (2) soil and water conservation activities; (3) telecommunications services providing mathematics and science programs to rural and small school districts; (4) 4-H programs and publications on food, agriculture, and natural resources; (5) environmental education activities; (6) aerospace and aviation education; (7) implementation of science programs in rural schools; (8) teaching modules on wilderness management and forestry; (9) programs to provide background on biomedical careers and biotechnology; and (10) networks to improve science and technology education in rural schools. (SV)

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VIGNETTES OF SEVERAL EXISTING RESOURCES FOR IMPROVING RURAL SCIENCE, MATHEMATICS, AND TECHNOLOGY EDUCATION

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National Future Farmers of America (FFA), National FFA Center, P.O. Box
15160, Alexandria, VA 22309-0160 Contact: Carol Duval, Program
Coordinator (703) 360-3600.

The National FFA has several programs aimed to assist agriculture teachers and students make a transition to agriscience. The purpose of the Agriscience Teacher of the Year Program is to recognize outstanding agriculture educators who emphasize agriscience technology in their curriculum. Open to any educator who is approved to teach agriculture in grades 7-12. Descriptions of past winning projects are available at the above address. The Agriscience Student Recognition Program recognizes agriscience students who are pursuing an academically challenging course of high school study that focuses on the application of scientific principles and emerging technology in an agricultural enterprise. The program provides financial assistance to FFA members planning to pursue a college degree in agricultural science is aimed at increasing the supply of agriscience graduates and informing parents, school officials, and the public of career opportunities for students with an agriscience background.

American Association of School Administrators (AASA), 1801 North Moore
St., Arlington, VA 22209 Contact: Walt Turner, Associate Executive
Director (703) 528-0700

AASA has contact with 4,000 member superintendents from rural or small school districts, and works closely with the National Rural Education Association. AASA maintains a Small School Program whose committee meets three times each year and networks the small districts identified by each state association. AASA also works closely with the American Association of Educational Service Agencies such as the BOCES found in CO and NY, and Intermediate Units in PA, which provide services to many rural and small school districts. AASA has several important publications aimed at rural, small schools such as: "A Summary of Telecommunications Efforts Involving Education Service Agencies and Others" a report from the American Association of Educational Service Agencies by J.K. Pinsel, and Leadership for Rural Schools by E.R. Stephens and W. Turner.

USDA-Soil Conservation Service (SCS), P.O. Box 2890, Washington, DC 20013 Contact: Tom Leverman, Head, Educational Relations (202) 447-6475.

The SCS helps local and state communities reduce the costly waste of land and water resources. SCS has a nationwide network of conservation specialists including engineers, soil scientists, agronomists, geologists, biologists, and foresters. Land users are assisted through nearly 3,000 local conservation districts. A summary of projects, which includes environmental education, is found in the brochure, "Assistance Available from the Soil Conservation Service." The SCS Environmental Education Program works with state departments of education, colleges and universities, local education agencies, and youth groups to provide conservation activities for students and teachers. The SCS Community Improvement Through Resource Conservation and Development is a group of local projects, usually covering several counties in which residents work to improve their economy and the environment through the conservation, development, and better utilization of their natural resources. Projects may include school based activities. Other federal agencies may also provide technical assistance. A brochure is available from the above address.

USDA-Extension Service (4-H), 5860 South Agriculture Building, Independence & 14th S.W., Washington, D.C. 20050 Contact: Allan T. Smith, National 4-H Program Leader (202) 447-5332

The Cooperative Extension System/4-H has expanded its activities to strengthen the science and technology content of their programs, involving some 5 million young people. This effort involves CES/4-H, Cooperative State Research Service/Higher Education, the White House Office of Science and Technology, and several Land Grant Universities. The goals are to network academically outstanding 4-H'ers into the food and agricultural sciences; and to give all 4-H'ers the technological literacy to function effectively in our future high-tech homes, jobs, and society. 4-H resources include: "Changing 4-H's Future: Science Leadership in Agriculture; A National Challenge" (a videotape for state leaders and university decision makers); "Science and Technology: The 4-H Way" Status Report 1986; "Energize the Green Machine" (career booklet for students); "The Science Workbook of Student Research Projects in Food-Agriculture-Natural Resources" (science fair projects for high school students); and a network and database of 4-H staff with strong backgrounds in science and technology. In addition, a three-part research/development project is underway to network academically outstanding 4-H'ers into food and agricultural sciences. Model projects include: 1) Food and Agricultural Career Education for Targeted Groups, 2) Academic Credit for 4-H High School Seniors Through Innovative Scholarly Projects and Activities, and 3) Introducing Food and Agricultural Science and Technology Applications into the 4-H Curriculum. A USDA science and education evaluation study has

been funded titled: "Identifying Instructional Strategies Most Effective in Recruiting Scientific Human Capital for Agriculture." 4-H will also sponsor a staff development and training symposium in 1989 titled, "Science and Technology in 4-H" in 1989 to report on progress and recommend future action. The most recent reports include: "National Initiatives: Building Human Capital" by Dr. Smith.

USDA-Forest Service, National Resource and Environmental Education,
P.O. Box 96090, Washington, DC 20090-6090 Contact: Marta Knowlton,
Director (202) 447-6605

The National Resource and Environmental Education Program provides environmental education activities and natural resource issue modules, for teachers and other groups, to encourage young people to observe their surroundings, and make decisions concerning those areas at risk. These materials are available through the American Forestry Association (see below). The Forest Service brochure, "The National Resource and Environmental Education Program of the Forest Service" provides further information and contact material.

Woodsy Owl Program, USDA-Forest Service, P.O. Box 96090, Washington,
DC 20090-6090 Contact: Paul Stienmetz, Manager of Cooperative Outdoor
Environmental Program (202) 475-3785

The Woodsy Owl Program is an environmental awareness campaign aimed to reduce pollution and littering through education of elementary school children. The "Woodsy Owl Environmental Education Leader's Kit" provides a teacher's guide and materials for K-3 teachers and students. The "Woodsy Owl's 1988 Campaign Catalog" lists posters and other materials to supplement teaching aids. New materials are under development titled, "Water Works," "Soil Works," and "Litter."

Project Learning Tree (PLT), American Forest Council, 1250 Connecticut
Avenue, N.W., Suite 320, Washington, DC 20036 Contact: Cathy
McGlaufflin, Director, (202) 463-2455

Project Learning Tree is an environmental education program designed for teachers and other educators working with students in kindergarten through grades 12. PLT includes over 175 activities that help teach science, mathematics, language arts, social studies, humanities, and other subjects. Teacher workshops are provided and a newsletter called "Branch." PLT is a grassroots volunteer program that works in conjunction with local school districts and state agencies. State coordinators and steering committees guide the development of the program and select and train workshop leaders. PLT is administrated by the American Forest Council, and is cosponsored by the American Forest Foundation and the Western Regional Environmental Education.

Project WILD, Salina Star Route, Boulder, CO 80302 Contact: Cheryl Charles, Director (303) 444-2390

Project WILD is an environmental and conservation education program of instructional worksheets and supplementary curriculum materials for teachers of kindergarten through high school age youth, which prepares students to be responsible decision makers. Project WILD is jointly sponsored at the national level by the Western Regional Environmental Education Council and the Western Association of Fish and Wildlife Agencies and includes participation by the Canadian Wildlife Federation, Defenders of Wildlife, National Wildlife Federation, The Wildlife Society, and the U.S. Fish and Wildlife Service. It is now sponsored and available in 39 states.

Federal Aviation Administration (FAA), Office of Public Affairs, Aviation Education Program, APA-120, 800 Independence Avenue, S.W., Washington, DC 20591 Contact: Mike Wayda, Aviation Awareness Coordinator (202) 267-3476 or 3471

FAA employs 46,000 people through 9 regional administrative offices, and 2 centers for training and research. Each of the regional offices and training centers has an educational coordinator whose main assignment is working with schools and colleges. FAA maintains a loosely structured network of 1,500 educators and aviation specialists known as Aviation Education Facilitators. FAA has several curricular materials that focus on aerospace and the sciences for elementary, middle, secondary, university, and college teachers and students. In addition, FAA offers an Aviation Career Series. FAA is also involved in the International Science Fair, and National Science and Technology Week. FAA is currently turning to satellite communications for sending aviation information to its staff and the public.

Council for Educational Development and Research, 1201-16th Street, N.W., Washington, DC 20036 Contact: Ullik Rouk, Director of Communications (202) 223-1593

CEDaR is the national association for the nine U.S. Department of Education's Regional Education Laboratories, and three research centers. Each lab has a rural coordinator and private sector representatives. In FY88 Congress appropriated \$4 million for the labs to be spent on rural, small school education initiatives over a three-year period. Each lab has a rural demonstration site. Labs will assess and address rural, small school needs by identifying or developing suitable promising practices. These practices are summarized the following document: "End of the Road: Rural America's Poor Students and Poor Schools," the National Rural, Small Schools Task Force Report to the Regional Educational Laboratories. Promising practices include: Implementing an Integrated Science Curriculum in California's

Rural Elementary Schools, and the Colorado Science Cluster Program. One of the recommendations from that report is that the laboratories and CEDaR should work with other interested parties to pull together a national policy plan for rural, small schools.

Aerospace Education Services Project (AESP/NASA), 300 North Cordell, Oklahoma State University, Stillwater, OK 74078 Contact: Ken Wiggins, Director (800) 553-0023

AESP provides professional services of specialists in aerospace education to schools in all areas of the country. Specialists provide demonstration-lecture programs and special classroom presentations for students; workshops, seminars, conferences, curriculum planning, and instructional materials for teachers; and presentations for civic clubs and professional groups, planetaria, museums, science centers, and radio and television. Requests for services may be submitted to the NASA regional research centers.

NASA Satellite Video Conferences for Teachers, NASA Headquarters, Code XE, Washington, DC 20546 Contact: Bill Nixon, Head of Educational Technology (202) 453-8388

NASA Satellite Video Conference for Teachers will provide four broadcasts during the 88-89 school year: "Aeronautics," Sept. 27, 1988; "Living in Space," Nov. 15, 1988; "Future Exploration," Jan. 24, 1989; and "Technology for Your Classroom," Mar. 21, 1989. These conferences are interactive because the teachers can talk to NASA scientists, engineers, and educators during the telecast. NASA uses two satellites to uplink and downlink signals at between the production studio, NASA centers, and schools. For further information contact Malcolm Phelps, Video Coordinator, NASA/AESP, 300 North Cordell, Oklahoma State University, Stillwater, OK 74078 (800) 553-0023. In addition, NASA also has an information access system called "SPACELINK" with 220,000 pages of information such as space science lesson plans and software directory that can be connected with by any pc and modem at (205) 895-0028.

American Forestry Association (AFA), P.O. Box 2000, Washington, DC 20013 Contact: Deborah Gangloff, Educational Programs (202) 667-3300

AFA has several publications appropriate for teachers and students. The "Gypsy Moth Workbook" explained 25 projects designed for students in preschool through junior high. In addition, AFA is producing and disseminating teaching modules for the U.S. Forest Service's Natural Resources and Environmental Education Issue Modules: "Wilderness Management," "Intensive Forest Management," "Integrated Forest Management," "Effects of Air Pollutants on Forest Ecosystems," Old Growth Forest Management," and "Natural Resource Topics for Minority Audiences." AFA also offers a new career brochure titled "So You Want to be in Forestry."

U.S. Department of Education, Office of Educational Research and Improvement, 555 New Jersey Avenue, N.W., Washington, DC 20208
Contact: Gordon McAndrew (202) 357-6126

The Star Schools Program provides demonstration grants to eligible telecommunications partnerships to develop, construct, and acquire telecommunications audio and visual facilities and equipment; to develop and acquire instructional programming; to obtain technical assistance for the use of such facilities; and instructional programming, in order to encourage improved instruction in mathematics, science, and foreign languages as well as other subjects such as vocational education. Priority areas include traditionally underserved populations and areas with scarce resources and limited access to courses in math, science, and foreign languages. Funding levels are \$10 million per year up to two years.

Arts and Sciences Teleconferencing Service (ASTS), 206 Life Sciences East, Oklahoma State University, Stillwater, OK 74078-0276 Contact: Leigh Walters (405) 624-5647

ASTS is a network of programs provided by Oklahoma State University, college of Arts and Sciences. Current course offerings include: physics, AP calculus, advanced chemistry, German, and Russian. ASTS now broadcasts to 170 school districts in 15 states.

TI-IN Network, Inc., 100 East Nasa Road 1, Webster, TX 77598 (713) 554-5545

TI-IN is a Texas satellite project for the delivery of K-12 instruction to high school juniors and seniors, and in-service classes for teachers. TI-IN transmits to any location in the U.S. Available courses include: physics, computer mathematics, computer science, algebra, trigonometry, and others. The TI-IN system also includes audio Talkback System allowing interaction between students and students. More than 20 courses are currently offered to about 120 school districts in 21 states.

Monsanto Corporate Research and Development Staff, Monsanto Company, 800 North Lindberg Blvd., St. Louis, MO 63167 Contact: Karen K. Rogers, Biotechnology Education Director

Monsanto is developing film and print materials on biotechnology for use in education programs by universities, schools, government agencies, and community groups. This company is involved in collaborative programs with academia aimed at the general public's scientific literacy.

U.S. Department of Education, Title II Program (Mathematics, Science, Computer Learning, Foreign Languages), Suite 2040, Mail Stop 6264, 400 Maryland Avenue, S.W., Washington, DC 20202 Contact: Allen Schmieder or Carolyn Lee (202) 732-4356 or Nancy Walters, Title II National Steering Committee (612) 296-2704

The Department of Education's Title II Program has recently received a substantial increase in funding and includes a rural and partnership component to enhance local elementary and secondary science and mathematics programs. It specifically singles out the needs of historically underrepresented and underserved groups of women, minorities, handicapped, and those with limited English proficiency. Partnerships between business, industry, and local education agencies are encouraged. Every state has a Title II coordinator. Since this is the fourth year for Title II funding, 23 local and state exemplary programs have been identified.

Edison Electric Institute (EEI), 1111 19th Street, N.W., Washington, DC 20036 Contact: Janet White, Educational Services Representative (202) 778-6590

Edison Electric Institute is the national association of America's investor-owned electric utilities with 175 members. Educational services at EEI are at the heart of a network of programs and liaisons that spreads nationwide through education organizations and its member utilities. Services range from packaged programs--films, classroom materials, assembly programs, tours of industry facilities--to ongoing partnerships with schools and education organizations. These partnerships encompass a myriad of programs--environmental education centers, science camps, museum exhibits, competitions, and teacher training, to name a few--that fit the local electric company's resources with the needs of schools in the areas. Each member company is autonomous in their ability to provide in-kind as well as funding assistance. EEI publishes a "Directory of Educational Services" provided by their member companies, which is available upon request from headquarters.

Triangle Coalition for Science and Technology Education, 5112 Berwyn Road (3rd Floor), College Park, MD 20740 Contact: Greg Crosby, Associate Director (301) 220-0873

The Triangle Coalition is a consortium of over 70 national groups from business, industry, and labor; scientific and engineering societies; and education associations with the common purpose of improving science and technology education for all students. The Triangle Coalition maintains a strong belief that if educational change is to occur, it must happen at the local level. Therefore, the Triangle promotes the formation and networking of local alliances or collaborations between community-based businesses, schools, and members of science, engineering, and education

associations. The Triangle currently maintains a clearinghouse of over 250 local alliances, hosts regional leadership conferences, publishes a newsletter, and coordinates other activities in support of local alliances. Other Triangle Coalition projects include: Improving Elementary Science, National School Volunteer Program, and Congressional Liaison Task Force.

Colorado State University, School of Educational and Occupational Studies, Humanities Building #103, Fort Collins, CO 80523 Contact: Dean Brown, Professor (303) 482-0566

Science Clustering is a technique used to bring teachers together from isolated agricultural and mountainous regions of rural Colorado to meet on a monthly basis for the purpose of returning to their students with relevant ways to do "hands-on" science. Colorado State University is working in cooperation with BOCES to serve 106 of the state's 176 districts (many of remaining 70 districts are in urban areas). Activities within each cluster include writing K-12 curriculum objectives, suggestions for "hand-on" activities, organizing resource databases for field trips and guest speakers, setting goals for science instruction, determining mechanisms for sharing science equipment and materials, and finding better ways to use microcomputers.

Biomedical Science Preparation Program (BioPrep), University of Alabama, P.O. Box 6291, Tuscaloosa, AL 35487 Contact: Larry Rainey, Project Director

The BioPrep Program works with students beginning in the 9th grade to prepare them to make career choices in the biomedical fields and to give them the background to follow through on their decisions. This program was stimulated by the fact that rural Alabama has been underserved by the health care professions, and the low proportion of minority or economically disadvantaged people in the professions. BioPrep is offered in 30 rural high schools in nine West Central Alabama counties. BioPrep works in partnerships with teachers to upgrade science instruction.

Rural Elementary Science Improvement Project (RESIP), Texas A&M University, EDCI, College of Education, College Station, TX 77845-4232 Contact: Robert James, RESIP Director (409) 845-0825

RESIP is an action plan to strengthen and broaden elementary science programs in rural schools by sharing creative ideas for hands-on teaching techniques. School administrators and teachers, university educators, parents, and local community members join forces to meet the needs identified by teachers and administrators. Two-day leadership workshops are provided for principals to become more proactive in leader elementary science programs. Community members provide science resources in the form of guest speakers, volunteer assistants, and field trip sites.

Teachers are provided workshop sessions in the areas of developing hand-on techniques, managing science programs, and assembling science activity kits.

National Rural Telecommunications Cooperative (NRTC), P.O. Box 9994,
Washington, DC (202) 944-2539

NRTC is owned by 425 rural utility co-ops and is governed by the rural electric leaders of its geographically diverse membership. NRTC is also guided and supported by representatives of the nation's rural telephone systems. In addition to a host of general entertainment and business uses, students in rural schools with limited curriculum can study foreign languages, advanced math and science by receiving instruction from colleges and universities via satellite. Several rural utility systems have already taken the initiative of delivering telecommunications service to their communities by donating dishes to local high schools, which will bring new curriculum to rural schools, students, and adults living in distant areas. Write the above address for further information.